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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,679	08/16/2006	Hiroto Horikawa	129109	7034

25944 7590 11/27/2009

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EXAMINER	
ASFAW, MESFIN T	
ART UNIT	**PAPER NUMBER**
2882	

MAIL DATE	DELIVERY MODE
11/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,679	HORIKAWA, HIROTO	
	Examiner	Art Unit	
	Mesfin T. Asfaw	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledgement is made to the amendment filed on 06/30/2009. Claims 21-45 are pending in this application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 21-30 and 32-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. [US 6400441 B1, hereafter Nishi] in view of Takashi [US 5610683].

As per Claims 21, 23, and 32-34, Nishi teaches a exposure apparatus (See fig. 2) that includes an exposure station EPS and a measuring station PIS and exposes a substrate W2 at the exposure station, comprising:

a plurality of movable members (WS1, WS2) each of which that holds a substrate and is movable between the exposure station and the measuring station (Column 9 line 4-42);

an optical member PL disposed at the exposure station which irradiates an exposure beam to the substrate held by a first one WS2 of the movable members at the exposure station; and

a measurement device 24a positioned at the measuring station PSI, which measures a second one WS1 of the movable members or a substrate W1 held by the second movable member at the measuring station (Column 47 lines 33-51).

Nishi does not explicitly teach that the exposure and the measurement is conducted via an immersion liquid which is disposed at the exposure station and a liquid is partially disposed on the second movable member or on the substrate held by the second movable member at measurement station.

Takahashi teaches a casing effective to fill the interspace between the optical element and the substrate opposed to each other; wherein the optical element provides an upper cover of the casing (Column 2 lines 17-65).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to incorporate the liquid containing casing system of Takahashi in the projection system and measurement system of Nishi so that the exposure and the measurement is conducted via an immersion liquid which is disposed at the exposure station and a liquid is partially disposed on the second movable member or on the substrate held by the second movable member at measurement station in order to improve exposure apparatus at a low cost and enhance productivity.

As per Claim 22, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21, Nishi further teaches the measurement at the measuring station is performed during the exposure at the exposure station (Column 55 lines 13-16).

As per Claim 24, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21. Takahashi further teaches a member 7 (See fig. 2) having a liquid contact surface substantially equivalent to the liquid contact surface of the optical member.

Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to form a first immersion area that is formed between the optical member and the substrate at the exposure station, and a second immersion area is formed between the contact member and the substrate at the measuring station in order to improve exposure apparatus at a low cost and enhance productivity..

As per Claim 25-27, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21. Takahashi further teaches a measuring instrument and a control means (a pressure gauge 27) (and pressure control means for controlling the pressure of the filling liquid, Column 3 lines 4-18) that measures the force exerted by said liquid upon said substrate or the substrate stage that holds said substrate (See fig. 2, Column 6 lines 30-48 and Column 9 lines 33-48).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to form a measurement device that measures a force exerted by the liquid to control the force exerted upon the second movable member or on the substrate held by the second movable member in order to control the level or the substrate and to keep the level flat.

As per Claims 28-29, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21, Nishi further teaches a first surface

information related to the substrate is obtained by performing a measurement in a state in which the liquid is disposed on the substrate, with the measurement device at the measuring station;

a second surface information related to the substrate is obtained by performing a measurement in a state in which the liquid is disposed on the substrate, with the measurement device at the exposure station; and

a compensation quantity that compensates the second surface information of the substrate at the exposure station is determined based on the first information and second surface information (Column 19 line 15 – Column 20 line 13, if the measurement is conducted via a liquid system, then surface information of the substrate is obtained in accordance with the position of an immersion area in surface direction of the substrate).

As per Claim 30, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21, Nishi further teaches the measuring station comprises a first mark FM1 detection device that measures, an alignment mark on the substrate W1 held by the second movable member WS1 and also measures, a fiducial mark MK2 provided on the second movable member (See fig. 19).

Takahashi further teaches the measurement could be conducted via a liquid system which is provided by a liquid containment system.

Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to incorporate the immersion system of Takahashi in the measurement system of Nishi to conduct the alignment measurement via a liquid in order to improve the accuracy of the measurement result.

As per Claim 42, Nishi teaches an exposure apparatus (See fig. 2) that includes an exposure station EPS and a measuring station PIS and exposes a substrate at the exposure station, comprising:

a plurality of movable members (WS1, WS2) each of which holds a substrate (W1, W2) and is movable between the exposure station and the measuring station (Column 9 line 4-42);

an optical member PL disposed at the exposure station which irradiates an exposure beam to the substrate held by a first one of the movable members at the exposure station.

Nishi does not specifically teach a first liquid supply device that forms an immersion area on the substrate held by the first movable member at the exposure station; and a second liquid supply device that forms an immersion area partially on a substrate held by a second one of the movable member at the measuring station.

Takahashi teaches a casing effective to fill the interspace between the optical element and the substrate opposed to each other; wherein the optical element provides an upper cover of the casing (Column 2 lines 17-65).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to incorporate the liquid containing casing system of Takahashi in the projection system and measurement system of Nishi so that to form a first liquid supply device that forms an immersion area on the substrate held by the first movable member at the exposure station; and a second liquid supply device that forms an immersion area partially on a substrate held by a second one of the movable member at

the measuring station in order to improve exposure apparatus at a low cost and enhance productivity.

As per Claims 35-41, 43-45, Nishi in view of Takahashi teaches the method as claimed, because under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claims, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. *In re King*, 801 F.2d 1324,231 MPEP 2112.02".

3. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Takashi as applied to claim 21 above, and further in view of what is well known in the art.

As per Claim 31, Nishi in view of Takahashi teaches the liquid immersion exposure apparatus according to claim 21.

Nishi in view of Takahashi does not specifically teach a part of the each of a plurality of movable members that contacts with a liquid is provided with liquid repellency treatment.

However, use of a substrate support surface that is treated with a liquid repellent material is common in the art of immersion lithography.

Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to incorporate a movable member with a surface that contacts with

a liquid is provided with liquid repellent treatment in order to create a hydrophobic surface so that a spilled liquid does not stay on the substrate support and contaminate the device.

Response to Arguments

4. Applicant's arguments filed 06/30/2009 have been fully considered but they are not persuasive.

5. In the remark section page 11 Para 4, Applicant argued that Nishi in view of Takahashi fails to disclose, or render obvious, the features of "a measurement device position at the measuring station, which measures a second one of the movable members or a substrate held by the second movable member at the measuring station, wherein a liquid is partially disposed on the second movable member or on the substrate held by the second movable member,".

The Examiner respectfully disagrees, Nishi teaches two stages (WS1), (WS2) holding wafers can independently move between a positional information measuring section (PIS) under an alignment system (24a) and an exposing section (EPS) under a projection optical system (PL). And,

Takashi teaches a casing effective to fill the interspace between the optical element and the substrate opposed to each other; wherein the optical element provides an upper cover of the casing. Therefore, one of ordinary skill in the art would obviously motivated to incorporate the liquid containing system of Takashi in to the system of Nishi in order to improve exposure apparatus at a low cost and enhance productivity. Therefore, Applicant's argument on this point is not persuasive.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mesfin T. Asfaw whose telephone number is 571-270-5247. The examiner can normally be reached on Monday to Friday, 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mesfin T Asfaw/
Examiner, Art Unit 2882

/Alan A. Mathews/
Primary Examiner, Art Unit 2882